3. AFFECTED ENVIRONMENT

To analyze potential environmental impacts that could result from the implementation of the Proposed Action, the U.S. Department of Energy (DOE) has compiled extensive information about the environments that could be affected. The Department used this information to establish the *baseline* against which it measured potential impacts (see Chapter 4). Chapter 3 describes (1) environmental conditions that will exist at and in the region of the proposed repository site at Yucca Mountain after the conclusion of site characterization activities (Section 3.1); (2) environmental conditions along the proposed transportation corridors in Nevada that DOE could use to ship spent nuclear fuel and high-level radioactive waste to the Yucca Mountain site (Section 3.2); and (3) environmental conditions at the 72 commercial and 5 DOE sites in the United States that manage spent nuclear fuel and high-level radioactive waste (Section 3.3).

DOE obtained baseline environmental information from many sources. These sources included reports and studies sponsored by DOE, other Federal agencies (for example, the U.S. Geological Survey), and the State of Nevada and affected units of local government. Affected units of local government include Nye County, which is the county in which the repository site is located, by DOE decision as allowed under the Nuclear Waste Policy Act, as amended (this EIS refers to the amended Act as the NWPA), counties contiguous to Nye County (that is, Clark, Lincoln, White Pine, Eureka, Lander, Churchill, Mineral, and Esmeralda Counties in Nevada and Inyo County in California). In addition, DOE has sought input from Elko County, Nevada, which could be affected by transportation activities associated with the Proposed Action.

DOE received reports from the State of Nevada and affected units of local government during the EIS scoping process, informally from local government personnel, and formally during ongoing interactions between DOE and State and local governments. The subjects of these reports include socioeconomics, cultural resources, hydrology, transportation planning and emergency response, and resource supply. DOE evaluated these reports and, where appropriate, they are discussed in individual resource area sections of the EIS.

3.1 Affected Environment at the Yucca Mountain Repository Site at the Conclusion of Site Characterization Activities

To define the existing environment at and in the region of the proposed repository, DOE has compiled environmental baseline information for 13 subject areas. This environment includes the manmade structures and physical disturbances from DOE-sponsored site selection studies (1977 to 1988) and site characterization studies (1989 to 2001) to determine the suitability of the site for a repository. This chapter and supporting documents, called *environmental baseline files*, contain baseline information for:

- *Land use and ownership:* Land-use practices and land ownership information in the Yucca Mountain region (Section 3.1.1)
- *Air quality and climate:* The quality of the air in the Yucca Mountain region and the area's climatic conditions (temperature, precipitation, etc.) (Section 3.1.2)
- *Geology:* The geologic characteristics of the Yucca Mountain region both at and below the ground surface, the frequency and severity of seismic activity, volcanism, and mineral and energy resources (Section 3.1.3)
- *Hydrology:* Surface-water and groundwater features in the Yucca Mountain region and the quality of the water (Section 3.1.4)

- *Biological resources and soils:* Plants and animals that live in the Yucca Mountain region, the occurrence of special status species and *wetlands*, and the kinds and quality of soils in the region (Section 3.1.5)

- *Cultural resources:* Historic and archaeological resources in the Yucca Mountain region, the importance those resources hold, and for whom (Section 3.1.6)

- *Socioeconomic environment:* The labor market, population, housing, some public services, real *disposable income*, *gross regional product*, government spending, and DOE payment equal to taxes in the Yucca Mountain region (Section 3.1.7)

- *Occupational and public health and safety:* The levels of radiation that occur naturally in the Yucca Mountain air, soil, animals, and water; radiation dose estimates for Yucca Mountain workers from *background radiation*; radiation exposure, dispersion, and accumulation in air and water for the Nevada Test Site area from past nuclear testing and current operations; and public radiation dose estimates from background radiation (Section 3.1.8)

- *Noise and Vibration:* Noise and vibration sources and levels of noise and vibration that commonly occur in the Yucca Mountain region during the day and at night, and the applicability of Nevada standards for noise in the region (Section 3.1.9)

- *Aesthetics:* The visual resources of the Yucca Mountain region in terms of land formations, vegetation, and color, and the occurrence of unique natural views in the region (Section 3.1.10)

- *Utilities, energy, and materials:* The amount of water available for the Yucca Mountain region, water-use practices, water sources, the demand for water at different times of the year, the amounts of power supplied to the region, the means by which power is supplied, and the availability of natural gas and propane (Section 3.1.11)

- *Waste and hazardous materials:* Ongoing solid and hazardous waste and wastewater management practices at Yucca Mountain, the kinds of waste generated by current activities at the site, the means by which DOE disposes of its waste, and DOE recycling practices (Section 3.1.12)

- *Environmental justice:* The locations of *low-income* and *minority populations* in the Yucca Mountain region and the income levels among low-income populations (Section 3.1.13)

DOE evaluated the existing environments in regions of influence for each of the 13 subject areas. Table 3-1 defines these regions, which are specific to the subject areas in which DOE could reasonably expect to predict impacts, if any, related to the proposed repository. Human health risks from exposure to airborne *contaminant* emissions were assessed for an area within approximately 80 kilometers (50 miles), and economic effects, such as job and income growth, were evaluated in a three-county socioeconomic region.

In the past, the vicinity around Yucca Mountain has been the subject of a number of studies in support of mineral and energy resource exploration, nuclear weapons testing, and other DOE activities at the Nevada Test Site. From 1977 to 1988, the Yucca Mountain Project performed studies to assist in the site selection process for a repository. These studies, which involved the development of roads, drill holes, trenches, and seismic stations, along with non-Yucca Mountain activities, disturbed about 2.5 square kilometers (620 acres) of land in the vicinity of Yucca Mountain (DIRS 104854-YMP 1998, p. 1). Yucca Mountain site characterization activities began in 1989 and continued through 2001. These activities include surface excavations, excavations of exploration shafts, subsurface excavations and borings, and testing to evaluate the suitability of Yucca Mountain as the site for a repository. As of 2001, these activities have

Table 3-1. Regions of influence for the proposed Yucca Mountain Repository.

Subject area	Region of influence
Land use and ownership	Land around site of proposed repository that DOE would disturb and over which DOE would need to obtain control; analyzed land withdrawal area is 600 square kilometers[a] (Section 3.1.1).
Air and climate	An approximate 80-kilometer[b] radius around Yucca Mountain, and at boundaries of controlled lands surrounding Yucca Mountain (Section 3.1.2).
Geology	The regional geologic setting and the specific geology of Yucca Mountain (Section 3.1.3).
Hydrology	*Surface water:* construction areas that would be susceptible to erosion, areas affected by permanent changes in flow, and areas downstream of the repository that would be affected by eroded soil or potential spills of contaminants.
	Groundwater: aquifers that would underlie areas of construction and operation, aquifers that could be sources of water for construction, and aquifers downstream of the repository that repository use or long-term releases from the repository could affect (Section 3.1.4).
Biological resources and soils	Area that contains all potential surface disturbances resulting from the Proposed Action (described in Chapter 2) plus some additional area to evaluate local animal populations; roughly equivalent to the analyzed land withdrawal area of about 600 square kilometers (Section 3.1.5).
Cultural resources	Land areas that repository activities would disturb (described in Chapter 2) and areas in the analyzed land withdrawal area where impacts could occur (Section 3.1.6).
Socioeconomic environment	Three Nevada counties (Clark, Lincoln, and Nye) in which repository activities could most influence local economies and populations (Section 3.1.7).
Occupational and public health and safety	An approximate 80-kilometer radius around Yucca Mountain and at the approximate boundary of analyzed land withdrawal area (Section 3.1.8).
Noise and vibration	Existing residences in the Yucca Mountain region and at the approximate edge of the analyzed land withdrawal area (Section 3.1.9).
Aesthetics	Approximate boundary of analyzed land withdrawal area (Section 3.1.10).
Utilities, energy, and materials	Public and private resources on which DOE would draw to support the Proposed Action (for example, private utilities, cement suppliers) (Section 3.1.11).
Waste and hazardous materials	On- and offsite areas, including landfills and hazardous and radioactive waste processing and disposal sites, in which DOE would dispose of site-generated repository waste (Section 3.1.12).
Environmental justice	Varies with the different subject areas. The environmental justice regions of influence will correspond to those of the specific subject areas, as defined in this table (Section 3.1.13).

a. 600 square kilometers = about 150,000 acres or 230 square miles.
b. 80 kilometers = about 50 miles.

disturbed about an additional 1.5 square kilometers (370 acres) in the vicinity of Yucca Mountain (DIRS 104508-CRWMS M&O 1999, Table 6-2). Reclamation activities have started and will continue to occur as sites are released from further study.

The existing environment at Yucca Mountain includes the Exploratory Studies Facility, which includes the tunnel (drift), the North and South Portal pads and supporting structures, an excavated rock storage area, a topsoil storage area, borrow pits, boreholes, trenches, roads, and supporting facilities and disturbances for site characterization activities. Table 3-2 lists facilities, structures, equipment, and disturbances at Yucca Mountain and at the central support site in Area 25 of the Nevada Test Site. Area 25 was used in the early 1960s by the Atomic Energy Commission (a DOE predecessor agency) and the National Aeronautics and Space Administration as part of a program to develop nuclear reactors for use in the Nation's space program. The former Nuclear Rocket Development Station administrative areas complex in Area 25 has become the Yucca Mountain Site Characterization Central Support Site. As noted in the table, several of the Area 25 functions have been relocated to the North Portal site since the publication of the Draft EIS.

Table 3-2. Existing facilities, structures, and disturbances at Yucca Mountain.[a]

Yucca Mountain	Area 25 Central Support Site
Exploratory Studies Facility (North Portal pad and supporting structures)	Field Operations Center (moved)[b]
Exploratory Studies Facility (South Portal pad)	Hydrologic research facility
Cross drift[c]	Sample management facility and warehouse
Concrete batch plant and precast yard	Radiological studies facility (moved)[b]
Fill borrow pits (3) and screening plants	Meteorology/air quality studies facility (moved)[b]
Subdock equipment storage facility	Project accumulation area for hazardous waste
Equipment/supplies laydown yard	Gas station
Hydrocarbon management facility	Maintenance facility
Boxcar equipment and supplies yard	U.S. Geological Survey technical warehouse (moved)[b]
Water wells J-12 and J-13	Tunnel rescue facility
Excavated rock storage pile	Sewage lagoon operated by the Nevada Test Site
Topsoil storage pile	
Explosives storage magazines (2)	
Water booster pump and distribution system	
Boreholes (about 300)	
Trenches and test pits (about 200)	
Busted Butte geologic test drift	
Fran Ridge heated-block test facility	
Water infiltration test sites	
Meteorological monitoring towers	
Air quality monitoring sites	
Radiological monitoring sites	
Ecological study plots	
Reclamation study plots	
Septic system	
Roads	

a. Source: Modified from DIRS 148111-CRWMS M&O (1998, all) and DIRS 155933-Jacobs (2001, all).
b. These functions have been relocated to the North Portal site since the Draft EIS was published.
c. Drift is a mining term for a horizontal tunnel.

DOE has made revisions to this section since the Draft EIS to present newly acquired information that contributes to an improved (or updated) understanding of the potentially *affected environment* at Yucca Mountain and its region, and to include information and suggestions for improvement provided through

public comments on the Draft EIS and the Supplement to the Draft EIS. The following items summarize key changes to the EIS that deal with the affected environment at the Yucca Mountain site:

- Corrections and updates were made to *land use* figures and text, including changes to the breakout of Nevada land by controlling authority to be consistent with recent land transactions. Clarification was provided on the statutory requirements associated with the proposed land withdrawal, on the rationale for the size of the withdrawal, and on the breakout of the agencies with administrative authority over the land.

- *Air quality and climate* text was modified to better describe the attainment status of areas outside the region of influence and to discuss Federal agency responsibilities under the *conformity* provisions of the Clean Air Act. A new section was added to describe paleoclimatology studies that have been performed as part of the Yucca Mountain Project.

- Minor text changes, including facts and figures, were made to both the *geology* and *hydrology* discussions in response to comments and to ensure consistency with updated information in the new primary source document, the *Yucca Mountain Site Description* (DIRS 151945-CRWMS M&O 2000, all). Several geology and hydrology figures were improved with better graphics or additional information, and several figures were added.

- A new *geology* discussion was added on the formation and characteristics of fractures found in the rock at Yucca Mountain. An update was added to describe the status of ongoing efforts to monitor crustal strain rates in the area.

- Text was added or modified in *hydrology* discussions to better describe the direction of groundwater and the lack of water observed in the subsurface during tunneling at Yucca Mountain, and to provide information on the Devils Hole National Monument and on Nevada Test Site groundwater modeling efforts. Updates were added to describe the status of ongoing efforts to collect additional hydrologic information, including those resulting from the cooperative agreement between Nye County and DOE to investigate the groundwater flow system downgradient of Yucca Mountain. Updates were also added to discuss efforts to validate and verify chlorine-36 study results, and to study postulated evidence of past upwelling of the water table.

- The *biological resources* discussion of plant species in the area of Yucca Mountain was expanded to include identification of exotic species. Text was modified to describe more accurately the opposing viewpoint expressed by the State of Nevada with respect to the biological studies performed as part of the Yucca Mountain Project.

- *Socioeconomics* text and indicator numbers were revised to incorporate updated information from State of Nevada and local agency population estimates. Text was added to explain the basis for using these numbers rather than numbers anchored in 2000 Census data that became available since the publication of the Draft EIS. Socioeconomic indicator data (Gross Regional Product, government spending, and real disposable income) were added and discussions in several key areas were expanded to include estimates of socioeconomic indicators to 2035.

- The region of influence population *distribution* presented in the *occupational and public health and safety* discussion was changed to the new population estimates and is now described for both 2000 and 2035. The discussion of natural radiation sources was revised for clarity and accuracy. Tables and text were revised to better describe background/baseline radiation exposures and their effects at Yucca Mountain, in Nevada, and at other sites in the United States. A new section was added to discuss regional effects from past weapons testing at the Nevada Test Site.

- New text and a new table were added to the *noise* discussions to introduce the concept of vibration as an element of environmental assessment. The existing discussion of noise was augmented with a description of noise threshold levels that present hearing hazards as opposed to annoyance.

- Clarifying text was added to the *aesthetics* section's discussion of the Bureau of Land Management Visual Resource Management system, and particularly for the system's scenic quality component. Text was added describing nighttime darkness as an element of aesthetics for the Yucca Mountain region.

- Updated information was included in discussions of *utilities, energy, and site services*, as well as for *waste and hazardous materials*.

- *The environmental justice* discussion was expanded to better described the evaluation methodology and updated to incorporate 2000 Census data on minority communities. (The 1990 Census data still represents the most current available data for low-income communities.)

3.1.1 LAND USE AND OWNERSHIP

The *region of influence* for land use and ownership includes land at the site of the proposed repository that DOE would not disturb and the lands that surround the site of the proposed repository over which DOE would have to obtain permanent control to operate the repository. The Department has compiled land-use and ownership information for this region. Most of the land in the region is managed by agencies of the Federal Government. Sections 3.1.1.1 and 3.1.1.2 discuss land use and ownership for the region of influence and for a larger area around Yucca Mountain. Section 3.1.1.3 describes the *analyzed land withdrawal area* for the repository. Section 3.1.1.4 discusses Native American views about the ownership of the land around Yucca Mountain. The Environmental Baseline File for Land Use (DIRS 104993-CRWMS M&O 1999, all) is the basis of the information in this section unless otherwise noted.

3.1.1.1 Regional Land Use and Ownership

The Federal Government manages more than 85 percent of the land in Nevada (about 240,000 square kilometers or 93,000 square miles). Most of this land is under the control of the Bureau of Land Management (which is part of the U.S. Department of the Interior), the U.S. Department of Defense, and DOE. The remainder of the Federally managed land is primarily under the jurisdiction of the Forest Service, which is part of the U.S. Department of Agriculture, with smaller areas under the control of the National Park Service and the Bureau of Reclamation, both of which are parts of the Department of the Interior. About 42,000 square kilometers (16,000 square miles) are under State, local, or private ownership, and about 5,000 square kilometers (2,000 square miles) are Native American lands. Table 3-3 summarizes Nevada land holdings and the controlling authority. Figure 3-1 shows ownership and use of lands around the site of the proposed repository.

The Nevada Test Site, which is a DOE facility, covers about 3,700 square kilometers (1,400 square miles). The Atomic Energy Commission, a DOE predecessor agency, established the Nevada Test Site in the 1950s to test nuclear devices. More information on current and future uses of the Nevada Test Site is available in the *Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada* (DIRS 101811-DOE 1996, all). The U.S. Air Force operates the Nellis Air Force Range [its name recently changed to the Nevada Test and Training Range (DIRS 157220-BLM 2001, all)], which covers about 12,000 square kilometers (4,500 square miles) and is one of the largest and most active military training ranges in the United States. More information on current and future uses of the Nellis Range is available in the *Renewal of the Nellis Air Force Range Land Withdrawal Legislative Environmental Impact Statement* (DIRS 103472-USAF 1999, all). The Military Lands Withdrawal Act of 1999, approved by the passage of Public Law 106-65 on October 5, 1999, went into effect on

Table 3-3. Nevada land areas and controlling authorities (square kilometers).[a,b]

Authority	Area	Percentage[c]
State, local, county, or private	42,000	15
Bureau of Land Management	194,000	68
Department of Defense	13,000	5
Department of Energy	3,700	1
Other Federal authorities	26,000	9
Native American tribes	5,000	2

a. Source: DIRS 104993-CRWMS M&O (1999, p. 1); DIRS 103472-USAF (1999, pp. 2-8 to 2-10); and DIRS 154121-DOI (2000, Volume I, p. 19)
b. To convert square kilometers to square miles, multiply by 0.3861.
c. Percentages calculated from area numbers prior to rounding and are shown to the nearest 1 percent.

November 6, 2001 and extended the affected land withdrawal until November 6, 2021. Actions taken under the Act at the Nellis Range also affected lands managed by the Bureau of Land Management and the Department of Energy (DIRS 103472-USAF 1999, pp. 2-8 to 2-10). Approximately 140 and 520 square kilometers (55 and 200 square miles) of land were transferred from the Department of Defense (that is, the Nellis Range) to the Bureau of Land Management (for public use) and DOE, respectively. Approximately 160 square kilometers (60 square miles) of land formerly withdrawn for use by DOE was transferred to the Department of Defense. The Nevada land areas and controlling authorities summarized in Table 3-3 incorporate these changes.

The region has special-use areas, which generally are excluded from development that would require terrain alterations unless such alterations would benefit wildlife or public recreation. The Fish and Wildlife Service of the U.S. Department of the Interior manages the Desert National Wildlife Range and the Ash Meadows National Wildlife Refuge, which are about 50 kilometers (30 miles) east and 39 kilometers (24 miles) south of Yucca Mountain, respectively (Figure 3-1). These areas provide *habitat* for a number of resident and migratory animal species in relatively undisturbed natural ecosystems. The National Park Service manages Death Valley National Park, which is in California and Nevada approximately 35 kilometers (22 miles) southwest of Yucca Mountain. The small enclave of Devils Hole Protective Withdrawal in Nevada adjacent to the east-central boundary of Ash Meadows is also administered by the National Park Service (Figure 3-1). The Timber Mountain *Caldera* National Natural Landmark is located primarily on the Nellis Air Force Range and the Nevada Test Site. The Landmark is just north of the proposed repository withdrawal area. The Timber Mountain Caldera is also designated as an Area of Critical Environmental Concern (DIRS 157220-BLM 2001, p. 2-9).

CALDERA

A volcanic crater that has a diameter many times that of the vent. It is formed by collapse of the central part of a volcano or by explosions of extraordinary violence. The erupted materials are commonly spread over great distances beyond the caldera. Volcanic debris that erupted from the Timber Mountain and other calderas north of Yucca Mountain formed the southwestern Nevada volcanic field of which the volcanic rocks at Yucca Mountain are a part.

There is virtually no State-owned land immediately adjacent to the repository site. There are scattered tracts of private land in and near communities such as Beatty and Indian Springs in Nevada. There are also larger private tracts in the Las Vegas Valley, around Pahrump, and in the south-central portion of the large area that makes up Amargosa Valley. The closest year-round housing is at what was once referred to as Lathrop Wells, about 22 kilometers (14 miles) south of the site. This location is now part of the unincorporated Town of Amargosa Valley. There is farming—primarily grasses and legumes—for hay and dairy operations about 30 kilometers (19 miles) south of the proposed repository (Figure 3-1).

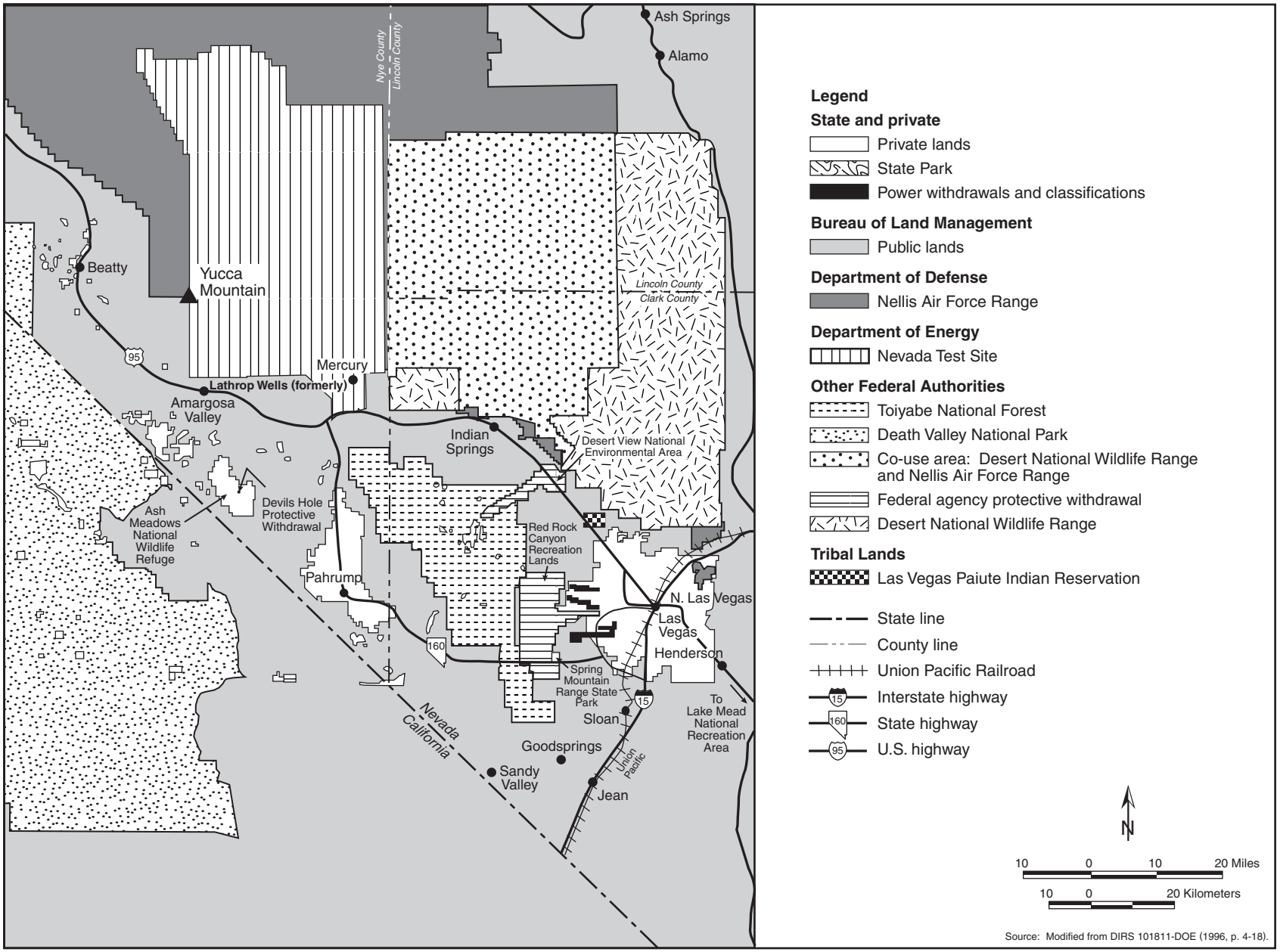

Figure 3-1. Land use and ownership in the Yucca Mountain region.

3.1.1.2 Current Land Use and Ownership at Yucca Mountain

DOE has established land-use agreements to support its site characterization activities at Yucca Mountain. The Yucca Mountain Site Characterization Zone (Figure 3-2) includes DOE, Bureau of Land Management, and Air Force lands.

The Bureau of Land Management granted DOE a right-of-way reservation (N-47748) for Yucca Mountain site characterization activities (DIRS 102218-BLM 1988, all). This reservation comprises 210 square kilometers (52,000 acres). The land in this reservation is open to public use, with the exception of about 20 square kilometers (5,000 acres) near the site of the proposed repository that were withdrawn in 1990 from the mining and mineral leasing laws to protect the physical integrity of the repository block (P.L. Order 6802, "Withdrawal of Public Land to Maintain the Physical Integrity of the Subsurface Environment, Yucca Mountain Project"). The lands in this reservation not withdrawn from the mining and mineral leasing laws contain a number of unpatented mining claims (lode and placer). In addition, there is one patented mining claim surrounded by the reservation. Patented Mining Claim No. 27-83-0002 covers 0.8 square kilometer (200 acres) to mine volcanic cinders used as a raw material in the manufacture of cinderblocks.

The Bureau of Land Management manages surface resources on the Nellis Air Force Range. In 1994, the Bureau granted DOE a right-of-way reservation (N-48602) to use about 75 square kilometers (19,000 acres) of Nellis land for Yucca Mountain site characterization activities (DIRS 102219-BLM 1994, all). This land, which is closed to public access and use, has been studied extensively. Many of the exploratory facilities are on Nellis land.

The Yucca Mountain Site Characterization Office and the DOE Nevada Operations Office have a management agreement that allows the use of about 230 square kilometers (58,000 acres) of Nevada Test Site land for site characterization activities. The Land Facility Use Management Policy under the Memorandum of Agreement with the Nevada Test Site gives the Yucca Mountain Project technical responsibility independent of, but in coordination with, environmental activities at the Nevada Test Site. The Yucca Mountain Project is in compliance with the agreement, which requires it to meet the same environmental requirements that apply to the Nevada Test Site.

3.1.1.3 Potential Repository Land Withdrawal

Nuclear Regulatory Commission initial licensing conditions for a monitored geologic repository (10 CFR Part 60) have been modified under 10 CFR Part 63 to include risk-informed, performance-based environmental regulations. These conditions include a requirement that the lands for which DOE is seeking a repository license be either acquired and under the jurisdiction and control of DOE or be permanently withdrawn and reserved for its use. As noted, portions of the lands being used for site characterization that would be required for the repository are controlled by the Bureau of Land Management, the Air Force, and the DOE Nevada Operations Office. Because all of these lands are not under permanent DOE control, a land withdrawal would be required.

The procedure for land withdrawal is the method by which the Federal Government places exclusive control over land it owns with a particular agency for a particular purpose. Only Congress has the power to withdraw Federal lands permanently for the exclusive purposes of specific agencies. Congress can authorize and direct a permanent withdrawal of lands such as those required for the proposed repository at Yucca Mountain. The extent and conditions of the withdrawal would be determined by Congress. The extent of a land withdrawal area is important to the analysis and understanding of the impacts of the Proposed Action. For example, the magnitude of impacts to a member of the public from an accident at an operating repository would be determined in part by the proximity of the land withdrawal boundary to

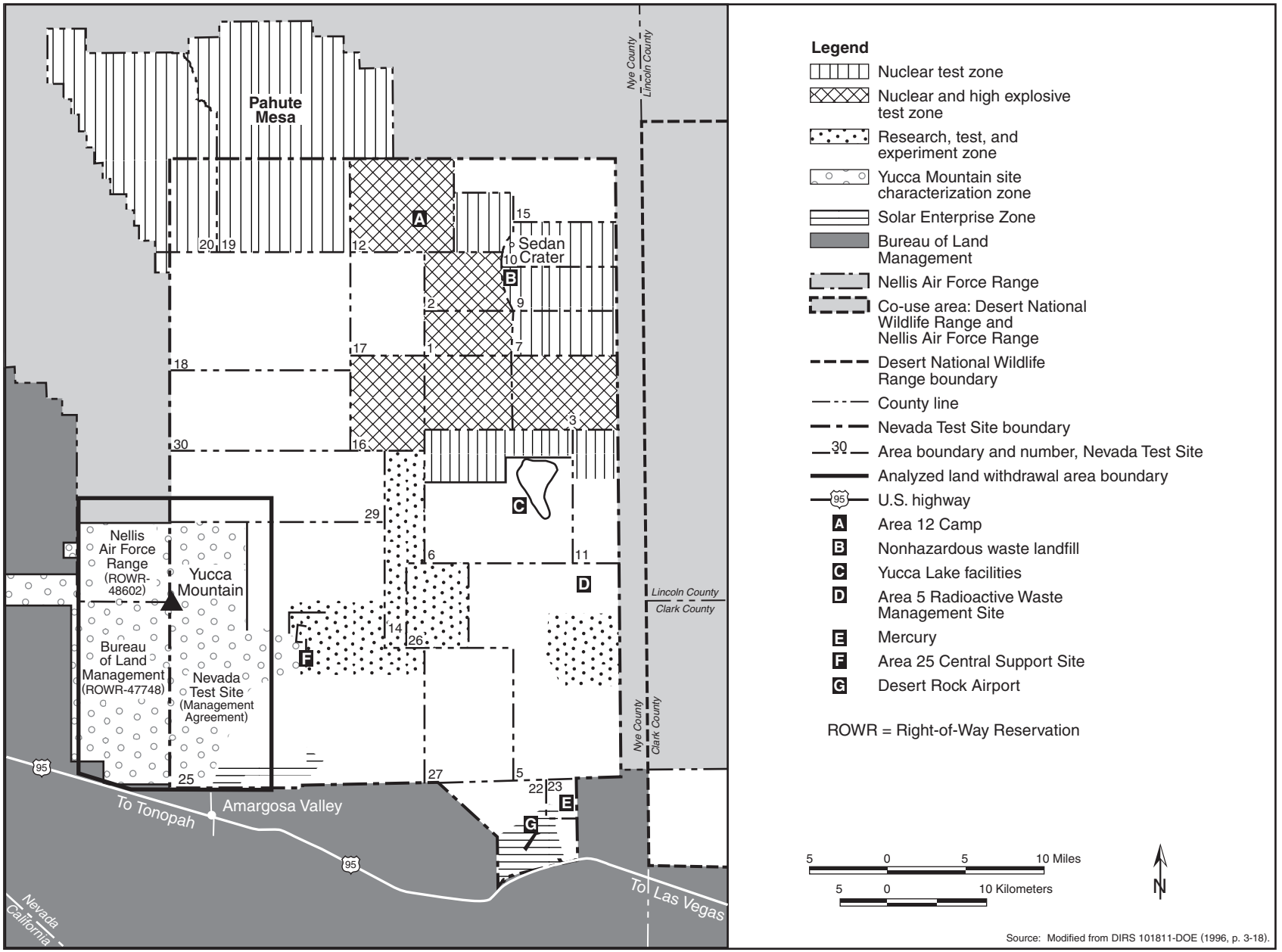

Figure 3-2. Land use and ownership in the analyzed land withdrawal area and vicinity.

the repository operations areas. As a consequence, DOE used a conservative land withdrawal area to extend control toward the closest populated area, the Town of Amargosa Valley, Nevada, thus preventing future encroachment as the basis for analysis in this EIS. The identification of either a restricted or *controlled area* boundary would be defined as part of the licensing process, if there was a determination to proceed with the Yucca Mountain Repository.

Figure 3-2 shows the land withdrawal area analyzed in this EIS that encompasses the current right-of-way reservations for site characterization. This area includes about 600 square kilometers (150,000 acres) of land. The land in this area is currently under the control of the Air Force, DOE, and the Bureau of Land Management (Table 3-4). Approximately 180 square kilometers (45,000 acres) of Bureau of Land Management land in the southwestern portion of the withdrawal area overlaps the taxing district for the unincorporated Town of Amargosa Valley, Nevada. This taxing district, described under Section 18.04.010 of the Nye County Code and Nye County Ordinance 136, encompasses approximately 1,300 square kilometers (320,000 acres). The 180 square kilometers of overlap is Federal land that the Bureau of Land Management administers as public land under a multiple-use classification that the Federal Government has not conveyed to a municipality.

Table 3-4. Current land administration and public accessibility to the analyzed land withdrawal area.[a,b]

Agency	Area (square kilometers)[c]	Current accessibility
DOE (Nevada Test Site)	320	No public access
U.S. Air Force (Nellis Air Force Range)	96	No public access
Bureau of Land Management (public land)	180	Public access
Private land (one patented mining claim)	1	No public access

a. Source: DIRS 153650-YMP (1998, all); DIRS 101521-BLM (1992, all).
b. A description of the area by township, range, and section is available from DOE, Las Vegas, Nevada.
c. To convert square kilometers to square miles, multiply by 0.3861; to convert to acres, multiply by 247.1.

Most of the land controlled by the Bureau of Land Management in the analyzed land withdrawal area is associated with the current right-of-way reservation (N-47748) for Yucca Mountain site characterization activities. This land is open to public use, with the exception of about 20 square kilometers (5,000 acres) near the site of the proposed repository that are withdrawn from the mining and mineral leasing laws and an existing patented mining claim (No. 27-83-0002). The lands open to public use also contain a number of unpatented mining claims (lode and placer). Off-road vehicle use is permitted in these lands. There is a designated utility corridor in the southern portion of these lands.

More detailed descriptions of the land under the control of the Bureau of Land Management in the region of Yucca Mountain are available in the *Proposed Las Vegas Resource Management Plan and Final Environmental Impact Statement* (DIRS 103079-BLM 1998, all).

3.1.1.4 Native American Treaty Issue

One Native American ethnic group with cultural and historic ties to the Yucca Mountain region is the Western Shoshone. A special concern of the Western Shoshone people is the Ruby Valley Treaty of 1863. The Western Shoshone people maintain that the treaty gives them rights to 97,000 square kilometers (24 million acres) in Nevada, including the Yucca Mountain region (DIRS 102216-Western Shoshone v. United States 1997, all). The legal dispute over the land began in 1946 when the Indian Claims Commission Act gave tribes the right to sue the Federal Government for unkept treaty promises. If a tribe were to win a claim against the Government, the Act specifies that the tribe could receive only a monetary award and not land or other remunerations.

The Western Shoshone people filed a claim in the early 1950s alleging that the Government had taken their land. The Indian Claims Commission found that Western Shoshone title to the Nevada lands had

gradually extinguished and set a monetary award as payment for the land. In 1976, the Commission entered its final award to the Western Shoshone people, who dispute the Commission findings and have not accepted the monetary award for the lands in question. They maintain that a settlement has not been reached (the U.S. Treasury is holding these monies in an interest-bearing account) and that Yucca Mountain is on Western Shoshone land. A 1985 U.S. Supreme Court decision (DIRS 148197-United States v. Dann 1985, all) ruled that even though the money has not been distributed, the United States has met its obligations with the Commission's final award and, as a consequence, the aboriginal title to the land had been extinguished.

3.1.2 AIR QUALITY AND CLIMATE

The region of influence for air quality is an area within a radius of about 80 kilometers (50 miles) around the site of the proposed repository and at the boundaries of controlled lands around Yucca Mountain. This region encompasses portions of Esmeralda, Clark, Lincoln, and Nye Counties in Nevada and a portion of Inyo County, California. To determine the air quality and climate for the Yucca Mountain region, DOE site characterization activities have included the monitoring of air quality and meteorological conditions. The Department has monitored the air for gaseous *criteria pollutants* (*carbon monoxide*, nitrogen dioxide, *ozone*, and *sulfur dioxide*) and for *particulate matter*. This section describes the existing air quality and climate at the proposed repository site and in the surrounding region. Sections 3.1.2.1 and 3.1.2.2 describe the air quality and climate, respectively. Unless otherwise noted, the *Environmental Baseline File for Meteorology and Air Quality* (DIRS 102877-CRWMS M&O 1999, all) is the basis for the information provided in this section.

3.1.2.1 Air Quality

Air quality is determined by measuring concentrations of certain pollutants in the atmosphere. The U.S. Environmental Protection Agency designates an area as being *in attainment* for a particular pollutant if *ambient* concentrations of that pollutant are below National *Ambient Air Quality Standards* (Table 3-5). (*Ambient air* is that part of the atmosphere outside buildings to which the general public has access.) The Environmental Protection Agency established the national standards, as directed by the Clean Air Act, to define levels of air quality that are necessary, with an adequate margin of safety, to protect the public health (primary standards) and the public welfare (secondary standards). The standards specify the maximum pollutant concentrations and frequencies of occurrence for specific averaging periods.

Areas in violation of one or more of these standards are called *nonattainment areas*. If there are not enough air quality data to determine the status of attainment of a remote or sparsely populated area, the area is listed as *unclassified*. For regulatory purposes, unclassified areas are considered to be in attainment.

Section 176(c)(1) of the Clean Air Act requires Federal agencies to ensure that their actions conform to applicable implementation plans for achieving and maintaining National Ambient Air Quality Standards for criteria pollutants. In addition, this section of the Act assigns primary oversight responsibility to the agencies, not to the Environmental Protection Agency or the States. Specifically, for there to be conformity, a Federal action must not contribute to new violations of standards for ambient air quality, increase the frequency or severity of existing violations, or delay timely attainment of standards in the area of concern (for example, a State or a smaller air quality region). The Environmental Protection Agency general conformity regulations (40 CFR 93, Subpart B) contain guidance for determining if a proposed Federal action would cause emissions to be above certain levels in locations designated as nonattainment or maintenance areas. In this case, a maintenance area is a region that was previously in nonattainment, but which has been redesignated to an attainment area with a requirement to develop a maintenance plan.